## IN THE CLAIMS

1. (Canceled)

2. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein removing the quantization noise comprises performing wavelet denoising using an enhancement wavelet transform.

3. (Original) The method defined in Claim 2 wherein the enhancement wavelet transform is a different transform than the inverse wavelet transform.

4. (Original) The method defined in Claim 2 wherein the enhancement wavelet transform is the same transform than the inverse wavelet transform.

5. (Original) The method defined in Claim 2 wherein performing wavelet denoising comprises applying the enhancement wavelet transform on a subset of all decomposition levels to which the inverse transform is to be applied.

6. (Original) The method defined in Claim 5 wherein the subset of decomposition levels comprise a set of consecutive decomposition levels.

7. (Original) The method defined in Claim 5 wherein the subset of decomposition levels comprise a set of non-consecutive decomposition levels.

8. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the inverse wavelet transform is part of a JPEG 2000 decoder and is applied as part of using the decoder on a JPEG 2000 codestream.

9. (Original) The method defined in Claim 2 wherein performing wavelet denoising comprises controlling denoising using level 2 enhancement wavelet transform coefficients.

10. (Original) The method defined in Claim 9 wherein controlling denoising comprises setting all level 1 enhancement wavelet transform coefficients to zero where a corresponding level 2 coefficient is zero or has a different sign.

11. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise depends on quantization performed and the inverse wavelet transform applied.

12. (Currently Amended) The method defined in Claim ~~1~~ 29 further comprising:

decoding image data, including applying the inverse wavelet transform to compression wavelet transform coefficients at level L to generate samples at enhancement wavelet transform level L-1 having quantization noise.

13. (Original) The method defined in Claim 12 further comprising repeatingly applying the inverse wavelet transform and removing quantization noise after each application of the inverse wavelet transform.

14. (Currently Amended) The method defined in Claim ~~1~~ 29 further comprising performing a deblurring operation on the reconstructed samples to enhance sharpness of an image.

15. (Canceled)

16. (Currently Amended) The method defined in Claim ~~15~~ 29 wherein thresholding coefficients comprises determining a threshold based on a scalar quantizer Q, where Q is a rational number.

17. (Original) The method defined in Claim 17 wherein the threshold is $\frac{1}{\sqrt{2}}Q$.

18. (Original) The method defined in Claim 17 wherein the inverse wavelet transform is a one dimensional, 5,3 wavelet transform.

19. (Original) The method defined in Claim 16 wherein the threshold is $1.5Q$.

20. (Original) The method defined in Claim 19 wherein the inverse wavelet transform is a two dimensional, 5,3 wavelet transform.

21. (Original) The method defined in Claim 16 wherein the inverse wavelet transform is a Daubechies 9,7 filter.

22. (Previously Presented) A method comprising:

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform; and

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components,

wherein thresholding coefficients comprises determining a threshold based on a scalar quantizer Q, where Q is a rational number, and

wherein scalar quantizer Q is equal to $2^{M_b-(P+C-\chi)} \cdot \Delta_b$ where

$M_b$ is $G+\varepsilon_b-1$ where G is a number of guard bits and $\varepsilon_b$ is an exponent indicated in a first tag in a codestream,

$(P+C-\chi)$ is the number of bitplanes decoded, and

$\Delta_b$ is indicated in a second tag in the codestream.

23. (Original) The method defined in Claim 16 wherein the scalar quantizer Q is determined from headers in a JPEG 2000 codestream.

24. (Currently Amended) The method defined in Claim ~~15~~ 29 wherein at least two thresholds are used for different regions of samples.

25. (Original) The method defined in Claim 24 wherein different regions of samples correspond to different codeblocks of wavelet coefficients.

26. (Original) The method defined in Claim 24 wherein different samples have different last coding passes.

27. (Currently Amended) The method defined in Claim ~~15~~ 29 wherein M equals 1.

28. (Currently Amended) The method defined in Claim ~~15~~ 29 wherein the forward and inverse transforms are forward and inverse Harr transforms.

29. (Previously Presented) A method comprising:

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform;

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients,

rescaling of coefficients after thresholding the coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components.

30. (Original) The method defined in Claim 29 wherein rescaling components comprises multiplying non-zero coefficients at level m by $R^{1/l} \cdot 2^{m\alpha}$, where m equals 1...M, where $\alpha$ is the parameter that determines the degree of smoothing or sharpening and R is the renormalization constant that preserves the norm of an image.

31. (Currently Amended) The method defined in Claim ~~15~~ 29 wherein thresholding of coefficients comprises setting a wavelet coefficient to zero if the absolute value of the wavelet coefficient is less than a threshold and not changing the wavelet coefficient if its absolute value is greater than or equal to the threshold.

32. (Previously Presented) A method comprising:

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform; and

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components, wherein thresholding of coefficients comprises shrinking a value of wavelet coefficient toward zero by an amount of a threshold if the absolute value of the wavelet coefficient is greater than or equal to the threshold.

33. (Original) The method defined in Claim 13 wherein the threshold comprises an average of thresholds corresponding to the maximal approximation error of four neighboring samples.

34. (Original) The method defined in Claim 13 wherein the threshold comprises a maximum of thresholds corresponding to the maximal approximation error of four neighboring samples.

35. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein characterizing quantization noise comprises computing differences between neighboring samples.

36. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise is not uniformally distributed throughout the reconstructed data.

37. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise is not continuous throughout the reconstructed data.

38. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise has discrete values.

39. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise has rational values.

40. (Original) The method defined in Claim 39 wherein the inverse wavelet transform is applied using a rational wavelet filter.

41. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein characterizing quantization noise comprises characterizing scalar quantization of wavelet coefficients.

42. (Currently Amended) The method defined in Claim ~~1~~ 29 wherein the quantization noise is scalar quantization noise.

43. (Canceled)

44. (Currently Amended) The decoder defined in Claim ~~43~~ 57 wherein the quantization noise removal block comprises a denoising unit to perform wavelet denoising using an enhancement wavelet transform.

45. (Original) The decoder defined in Claim 44 wherein the enhancement wavelet transform is a different transform than the inverse wavelet transform.

46. (Original) The decoder defined in Claim 44 wherein the enhancement wavelet transform is the same transform than the inverse wavelet transform.

47. (Original) The decoder defined in Claim 44 wherein performing wavelet denoising comprises applying the enhancement wavelet transform on a subset of all decomposition levels to which the inverse transform is to be applied.

48. (Original) The decoder defined in Claim 47 wherein the subset of decomposition levels comprise a set of consecutive decomposition levels.

49. (Original) The decoder defined in Claim 47 wherein the subset of decomposition levels comprise a set of non-consecutive decomposition levels.

50. (Original) The method defined in Claim 44 wherein the inverse wavelet transform is part of a JPEG 2000 decoder and is applied as part of using the decoder on a JPEG 2000 codestream.

51. (Currently Amended) The decoder defined in Claim ~~43~~ 57 wherein the quantization noise depends on quantization performed and the inverse wavelet transform applied.

52. (Currently Amended) The decoder defined in Claim ~~43~~ 57 wherein the inverse wavelet filter unit applies the inverse wavelet transform to compression wavelet coefficients at level L to generate samples at the enhancement wavelet transform level L-1 having quantization noise.

53. (Original) The decoder defined in Claim 51 wherein the inverse transform unit repeatedly applies the inverse wavelet transform and the quantization noise removal unit removes quantization noise after each application of the inverse wavelet transform.

54. (Original) The decode defined in Claim 44 wherein the denoising unit performs a deblurring operation on reconstructed samples to enhance sharpness of an image.

55. (Canceled)

56. (Currently Amended) The decoder defined in Claim ~~55~~ 57 wherein the quantization noise removal unit performs thresholding of coefficients by determining a threshold based on a scalar quantizer Q, where Q is a rational number.

57. (Previously Presented) A decoder comprising:

an inverse wavelet filter unit to apply an inverse wavelet transform;

a quantization noise characterization unit to characterize quantization noise in reconstructed data generated in response to application of the inverse wavelet transform; and

a quantization noise removal unit to remove the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, wherein the quantization noise removal unit rescales coefficients after thresholding the coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components.

58. (Original) The decoder defined in Claim 57 wherein the quantization noise removal unit rescales components by multiplying non-zero coefficients at level m by $R^{1/l} \cdot 2^{m\alpha}$, where m equals 1...M, where $\alpha$ is the parameter that determines the degree of smoothing or sharpening and R is the renormalization constant that preserves the norm of an image.

59. (Currently Amended) The decoder defined in Claim ~~55~~ 57 wherein the quantization noise removal unit thresholds coefficients by setting a wavelet coefficient to zero if the absolute value of the wavelet coefficient is less than a threshold and not changing the wavelet coefficient if its absolute value is greater than or equal to the threshold.

60. (Previously Presented) A decoder comprising:

an inverse wavelet filter unit to apply an inverse wavelet transform;

a quantization noise characterization unit to characterize quantization noise in reconstructed data generated in response to application of the inverse wavelet transform; and

a quantization noise removal unit to remove the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components,

wherein the quantization noise removal unit thresholds coefficients by shrinking a value of wavelet coefficient toward zero by an amount of a threshold if the absolute value of the wavelet coefficient is greater than or equal to the threshold.

61. (Previously Presented) A decoder comprising:

an inverse wavelet filter unit to apply an inverse wavelet transform;

a quantization noise characterization unit to characterize quantization noise in reconstructed data generated in response to application of the inverse wavelet transform; and

a quantization noise removal unit to remove the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components,

wherein thresholding is performed using a threshold, and further wherein the threshold comprises an average of thresholds corresponding to the maximal approximation error of four neighboring samples.

62. (Previously Presented) A decoder comprising:

an inverse wavelet filter unit to apply an inverse wavelet transform;

a quantization noise characterization unit to characterize quantization noise in reconstructed data generated in response to application of the inverse wavelet transform; and

a quantization noise removal unit to remove the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components,

wherein thresholding is performed using a threshold, and further wherein the threshold comprises a maximum of thresholds corresponding to the maximal approximation error of four neighboring samples.

63. (Canceled)

64. (Currently Amended) The article of manufacture defined in Claim ~~63~~ 105 further comprising instructions which, when executed by the system, cause the system to remove the quantization noise comprises performing wavelet denoising using an enhancement wavelet transform.

65. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ wherein the enhancement wavelet transform is a different transform than the inverse wavelet transform.

66. (Original) The article of manufacture defined in Claim 65 wherein the enhancement wavelet transform is the same transform than the inverse wavelet transform.

67 (Original) The article of manufacture defined in Claim 65 wherein the instructions to perform wavelet denoising comprises instructions to apply the enhancement wavelet transform on a subset of all decomposition levels to which the inverse transform is to be applied.

68. (Original) The article of manufacture defined in Claim 67 wherein the subset of decomposition levels comprise a set of consecutive decomposition levels.

69. (Original) The article of manufacture defined in Claim 67 wherein the subset of decomposition levels comprise a set of non-consecutive decomposition levels.

70. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ wherein the inverse wavelet transform is part of a JPEG 2000 decoder and is applied as part of using the decoder on a JPEG 2000 codestream.

71. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ wherein the quantization noise depends on quantization performed and the inverse wavelet transform applied.

72. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ further comprising instructions which, when executed by the system, cause the system to:

decode image data, including applying the inverse wavelet transform to compression wavelet transform coefficients at level L to generate samples at enhancement wavelet transform level L-1 having quantization noise.

73. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ further comprising instructions which, when executed by the system, cause the system to repeatingly apply the inverse wavelet transform and remove quantization noise after each application of the inverse wavelet transform.

74. (Currently Amended) The article of manufacture defined in Claim 105 ~~63~~ further comprising instructions which, when executed by the system, cause the system to perform a deblurring operation on the reconstructed samples to enhance sharpness of an image.

75-103 (Canceled)

104. (Previously Presented) An article of manufacture comprising one or more recordable media with executable instructions stored thereon which, when executed by a system, cause the system to perform a method, the method including

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform; and

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components,

wherein thresholding coefficients comprises determining a threshold based on a scalar quantizer Q, where Q is a rational number, and

wherein scalar quantizer Q is equal to $2^{M_b-(P+C-\chi)} \cdot \Delta_b$ where

$M_b$ is $G + \varepsilon_b - 1$ where G is a number of guard bits and $\varepsilon_b$ is an exponent indicated in a first tag in a codestream,

$(P + C - \chi)$ is the number of bitplanes decoded, and

$\Delta_b$ is indicated in a second tag in the codestream.

105. (Previously Presented) An article of manufacture comprising one or more recordable media with executable instructions stored thereon which, when executed by a system, cause the system to perform a method, the method including

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform;

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients,

rescaling of coefficients after thresholding the coefficients, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components.

106. (Previously Presented) An article of manufacture comprising one or more recordable media with executable instructions stored thereon which, when executed by a system, cause the system to perform a method, the method including

characterizing quantization noise in reconstructed data generated in response to application of an inverse wavelet transform; and

removing the quantization noise from the reconstructed data constructed during decoding, including

applying an M-level forward transform to LL components,

thresholding coefficients, including shrinking a value of wavelet coefficient toward zero by an amount of a threshold if the absolute value of the wavelet coefficient is greater than or equal to the threshold, and

applying a M-level inverse transform to thresholded coefficients to create denoised LL components.